

CLAIMS

We claim:

- 1 1. A tidal seepage meter, comprising:
  - 2 a) a power supply;
  - 3 b) a controller, operatively coupled to said power supply, capable of controlling said power
  - 4 supply in accordance with a sampling schedule.
  - 5 c) a motor, operatively coupled to said power supply, capable of receiving power from said
  - 6 power supply in accordance with said sampling schedule;
  - 7 d) a selector valve comprising an input port and at least two outlet ports, operatively
  - 8 coupled to said motor, capable of selecting an output valve in accordance with said
  - 9 sampling schedule;
  - 10 e) a seepage chamber, operatively coupled to said selector valve, capable of receiving
  - 11 seepage and inputting seepage to said selector valve via said input port;
  - 12 f) at least two sample containers, operatively coupled to said selector valve via at least two
  - 13 output valves, capable of receiving seepage from said selector valve via said output
  - 14 valve.
- 1 2. The tidal seepage meter of Claim 1, wherein said controller further comprises a motor relay.
- 1 3. The tidal seepage meter of Claim 1, wherein said tidal seepage meter further comprises a
- 2 computer, operatively coupled to said controller.
- 1 4. The tidal seepage meter of Claim 3, wherein said computer is operatively coupled to said
- 2 controller during uploading of said sampling schedule.
- 1 5. The tidal seepage meter of Claim 1, wherein said power supply comprises:
  - 2 i) a DC battery, capable of providing a voltage;
  - 3 ii) an inverter, operatively coupled to said motor;
  - 4 iii) a battery relay, operatively coupled to said controller, said inverter and said DC
  - 5 battery, capable of coupling said inverter and said DC battery in accordance with a
  - 6 sampling schedule.

- 1 6. The tidal seepage meter of Claim 1, wherein said power supply comprises a DC battery  
2 capable of providing a voltage.
- 1 7. The tidal seepage meter of Claim 1, wherein said selector valve comprises at least two multi-  
2 way selector valves.
- 1 8. The tidal seepage meter of Claim 1, wherein said seepage chamber comprises a semi-  
2 enclosed chamber.
- 1 9. The tidal seepage meter of Claim 1, wherein said motor comprises a stepper motor.
- 1 10. A method for a tidal seepage meter, the method comprising the steps of:  
2 a) transferring a sampling schedule having at least two sampling times;  
3 b) positioning said tidal seepage meter in sediment;  
4 c) sampling seepage in accordance with said sampling schedule.
- 1 11. The method of Claim 10 wherein said transferring a sampling schedule step (a) comprises the  
2 following sub-steps:  
3 i) preparing said tidal seepage meter;  
4 ii) transferring said sampling schedule having at least two sampling times.
- 1 12. The method of Claim 11 wherein said preparing said tidal seepage meter step (i) of Claim 11  
2 comprises cleaning all plumbing.
- 1 13. The method of Claim 10 wherein said positioning said tidal seepage meter in sediment step  
2 (b) comprises the following sub-steps:  
3 i) positioning said tidal seepage meter in sediment;  
4 ii) equilibrating said tidal seepage meter.
- 1 14. The method of Claim 10 wherein said positioning said tidal seepage meter in sediment step  
2 (b) comprises the following sub-steps:  
3 i) positioning said tidal seepage meter in sediment;  
4 ii) equilibrating said tidal seepage meter;  
5 iii) activating said tidal seepage meter.

1 15. The method of Claim 10 wherein said sampling seepage in accordance with said sampling  
2 schedule step (c) comprises the following sub-steps:

3 i) sampling seepage in accordance with said sampling schedule;

4 ii) retrieving tidal seepage meter samples.

1 16. The method of Claim 10 wherein said sampling seepage in accordance with said sampling  
2 schedule step (c) comprises the following sub-steps:

3 i) determining whether scheduled rotation time has occurred;

4 ii) returning to said determining step (i) of Claim 16 if said rotation time has not  
5 occurred;

6 iii) rotating a selector valve if said rotation time has occurred;

7 iv) determining whether sampling is completed;

8 v) returning to said determining step (i) of Claim 16 if sampling is not completed.

1 17. The method of Claim 10 wherein said sampling seepage in accordance with said sampling  
2 schedule step (c) comprises the following sub-steps:

3 i) determining whether scheduled rotation time has occurred;

4 ii) returning to said determining step (i) of Claim 16 if said rotation time has not  
5 occurred;

6 iii) rotating a selector valve if said rotation time has occurred;

7 iv) determining whether sampling is completed;

8 v) returning to said determining step (i) of Claim 16 if sampling is not completed;

9 vi) rotating said selector valve to a plugged port if sampling is completed.

1 18. A tidal seepage meter, comprising:

2 a) means for transferring a sampling schedule having at least two sampling times;

3 b) means for positioning said tidal seepage meter in sediment;

4 c) means for sampling seepage in accordance with said sampling schedule.

- 1 19. The tidal seepage meter of Claim 18 wherein said means for transferring a sampling schedule  
2 comprises the following:
- 3 i) means for preparing said tidal seepage meter;
- 4 ii) means for transferring said sampling schedule having at least two sampling times.
- 1 20. The tidal seepage meter of Claim 18 wherein said means for positioning said tidal seepage  
2 meter in sediment comprises:
- 3 i) means for positioning said tidal seepage meter in sediment;
- 4 ii) means for equilibrating said tidal seepage meter.
- 1 21. The tidal seepage meter of Claim 18 wherein said means for positioning said tidal seepage  
2 meter in sediment comprises:
- 3 i) means for positioning said tidal seepage meter in sediment;
- 4 ii) means for equilibrating said tidal seepage meter;
- 5 iii) means for activating said tidal seepage meter.
- 1 22. The tidal seepage meter of Claim 18 wherein said means for sampling seepage in accordance  
2 with said sampling schedule comprises:
- 3 i) means for sampling seepage in accordance with said sampling schedule;
- 4 ii) means for retrieving tidal seepage meter samples.